DYNAMICS OF PLAYA LAKES IN THE TEXAS HIGH PLAINS

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Type I Progress Report for
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TYPE I PROGRESS REPORT - JULY 31, 1973

A) Title - DYNAMICS OF PLAYA LAKES IN THE TEXAS HIGH PLAINS (342-C)

B) P.I. Identification Number - UN 168

C) Problems - The playas of the Double Lakes test site lost all water by July 1, the first time since designation as a test site in January, 1973. On July 6 vehicles were mired trying to negotiate the west side of the north playa as mud was present beneath the dry saliferous crust. Both playas have since flooded due to July rains, thus, drill holes and cores from the playas are still not in hand. However, the disappearance and reappearance of the water will allow quantitative measurements of the various water depths and mud cake.

D) Accomplishments - Our computer programmer (financed by outside funds) has refined the program for use of CCT's. A test printout at maximum scale of one-half of scene 1204-16533 was constructed, at a dimension of approximately 35 feet x 16 feet. Our program is set up to allow selection of a particular spectral band from any MSS scene. The four spectral MSS tapes of each scene are reconstituted on a single tape with each record representing a single horizontal line of a scene. All four bands are stored consecutively within this record. Selection of a single reconstituted tape or any area on the tape (scene) can be requested by a single control card. The printout can

be in numerical representation (0-9) or in print-density representation. The conversion to the desired representation is made according to the number of discriminants specified (0-15) on the control card. The range of the discriminants, from 1-256 scene density levels, can also be specified on the control card.

The weather station at the T-Bar site was dismantled as this site has received no rainfall since the Fall of 1972. Secondly, the site is too small to monitor.

During the short time the Double Lakes playas were dry, a few test holes were dug by hand auger. The present playa fill ranges from about 1 foot at the north end of the north playa to over 17 feet at the southwest end of the north playa. In the south playa, the fill is very shallow at the southwest end, deepening to the north; however, quanittative data has not been secured.

Planned for Next Reporting Period

The area-delineating capabilities of the SRI Console will be utilized to measure water areas of the various passes and relate to basin area at the Double Lakes test site. A time-lapse film sequence of the alterations in the size of the water area at the test site will also be produced by SRI.

Playa samples will be secured and an isopachous map produced of the playa fill providing the surface dries

enough to allow movement of the drill rig.

Synthesis of all climatic data has been started by meteorologist D.R. Haragan.

E) Relationship of Significant Results to Practical Applications - The research proposal "Wet Lake Census of Southern High Plains" was submitted to the Texas Water Development Board in the Spring, 1973. The proposal illustrated how a wet lake census could be taken (by use of ERTS data) of the Southern High Plains of West Texas and eastern New Mexico to provide the Texas Water Development Board with an estimation of the volume of surface water avaliable for artificial recharge or supplementary irrigation. The proposal was apparently favorably accepted, so much so that the TWDB has assigned Mr. Mike Ellis of the Board's Electronic Data Processing Division full-time to evaluate this and other procedures utilizing ERTS data. Our proposal, as such, will therefore not be funded.

F) NA

G) Recommendations Concerning Additional Investigative Effort, Etc. - The deteoriation of water quality concomitant with evaporation at the Double Lakes test site emphasized that spectral images of water depths are greatly effected by water quality. This aspect will be investigated during the coming year if ERTS data is provided.

H) NA

I) ERTS Image Descriptor Forms (see next page)

J) NA

ERTS IMAGE DESCRIPTOR FORM

(See Instructions on Back)

NDPF USE ONLY
D
N
ID

DATE July 31, 1973

PRINCIPAL INVESTIGATOR C.C. Reeves, Jr.

GSFC UN 168

ORGANIZATION Texas Tech University

PRODUCT ID (INCLUDE BAND AND PRODUCT)	FREQUENTLY USED DESCRIPTORS* Playa Lake	Hydrology		DESCRIPTORS
MSS Band 6, 7	✓	✓		Water-filled lakes

*FOR DESCRIPTORS WHICH WILL OCCUR FREQUENTLY, WRITE THE DESCRIPTOR TERMS IN THESE COLUMN HEADING SPACES NOW AND USE A CHECK (✓) MARK IN THE APPROPRIATE PRODUCT ID LINES. (FOR OTHER DESCRIPTORS, WRITE THE TERM UNDER THE DESCRIPTORS COLUMN).

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GSFC 37-2 (7/72)